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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,638	07/02/2004	Andrew Westcott	540-506	3003

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EXAMINER	
KAPLAN, HAL IRA	
ART UNIT	PAPER NUMBER
2836	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/500,638	WESTCOTT, ANDREW	
	Examiner	Art Unit	
	Hal I. Kaplan	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18,20-26 and 32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18,20-26 and 32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/10/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on January 10, 2007 was filed after the mailing date of the first Office Action on the merits on March 22, 2006 and the non-final Office Action on October 10, 2006. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner. However, Japanese document JP 2000-006523, drawn to a thermal transfer sheet and IC card employing the same, appears to have been cited and submitted in error as it does not appear to be relevant to the present application. If Applicant intended for a different document to be considered, Applicant may submit a supplemental information disclosure statement in compliance with 37 CFR 1.97 and 1.98, and MPEP §609, citing the correct document, and the correct document will be considered by the Examiner.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-18, 20-26, and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 1 recites the limitation "the period" in line 16. Claim 2 recites the limitation "the period" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claims. It is not clear whether this refers to the period during which the desired

voltage is to be supplied (the period recited in step (a), line 8) or the minimum time period by which successive transitions between on and off states of the first or second switching signal are separated (see line 13). Claims 2-18, 20-26, and 32 inherit this deficiency. It is also unclear to the Examiner whether the average voltage at the output is substantially equal to the desired voltage at all times or only for a period. If the average voltage at the output is always substantially equal to the desired voltage, then the phrase "for the period" in line 16 should be deleted. For purposes of this Office Action, the Examiner has assumed that the average voltage at the output is substantially equal to the desired voltage for a time period, as indicated in lines 8 and 16, and that the average voltage at the output outside of the time period is not relevant.

Claim 15 recites the limitation "wherein ... the method comprises the step ... corresponding to ... voltage drop and current flow". This is improper terminology because a step is a function that is performed, while voltage drop and current flow are numerical values. It is not clear to the Examiner what is meant by a function corresponding to numerical values. For purposes of this Office Action, the Examiner has interpreted claim 15 to recite that a substantially minimum voltage drop and current flow through the transistors during transitions between on and off states exists.

5. Claims 21-23 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential cooperative relationships of elements, such omission amounting to a gap between the necessary connections. See MPEP § 2172.01. The omitted cooperative relationships are: the relationship between the computer and method of claims 1 and 8 and the claimed switching and bridge circuits. Claim 21

recites the limitation "and computer programmed to perform the method steps of claim 1". Claim 23 recites the limitation "and computer programed to perform the method steps of claim 8" in line 4. These are unclear to the Examiner. For purposes of this Office Action, the Examiner has assumed that these should be "and a computer programmed to perform the method steps of claim 1 on said switching circuit" and "and a computer programmed to perfrom the method steps of claim 8 on said bridge circuit".

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1, 2, 8, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent of Chao (6,518,711) in view of the US patent application publication of Risbo (2005/0083115).

As to claims 1 and 8, Chao, drawn to a halogen lamp electronic transformer,

discloses a method of generating first and second switching signals for switching first and second switches of a switching circuit that further comprises an output that receives a DC supply of nominal voltage (D1) +Vs, and wherein switching between various combinations of on and off states of the switches produces a votlage at the output with pulses at levels of +Vs, 0V, and -Vs; the method comprising the steps of:

(a) receiving a voltage demand signal (from D1) indicative of a desired voltage to be supplied at the output in a period (see column 4, lines 7-49). Chao does not disclose the claimed minimum pulse width.

Risbo, drawn to soft transitions between muted and unmuted states in class D audio amplifiers, dislcoses a method comprising (b) generating first and second switching signals (outputs of 72+,72-), wherein the switching signals comprise single pulses of a determined width within a period, wherein the determined width does not fall below a minimum pulse width (see paragraph 71, line 7 - paragraph 73, line 7), and further, wherein successive transitions between on and off states of the switching signals that occur in different periods are separated in time by a minimum time period (duty cycle), and wherein the determined width is such that the combination of the first and second switching signals when applied to the first and second switches repectively produce an average voltage at the output that is substantially equal to the desired voltage (see column 73, lines 9-11). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the technique of Risbo to generate switching signals for the circuit of Chao, in order to allow control of the minimum on and off pulses to avoid instability of operation.

As to claim 2, the first switching signal of Risbo comrpises a single pulse of a first determined width within the period and the second switching signal comprises a single pulse of a second determined width within the period, wherein neither determined width falls below the minimum pulse width and wherein the combination of the first and second switching signals when applied to the first and second switches produce an average voltage at the output that is substantially equal to the desired voltage.

As to claim 15, the first and second switches (Q1,Q2 or Q3,Q4) of Chao are transistors, and there must necessarily be a minimum voltage drop and current flow through the transistors during transitions between on and off states.

Allowable Subject Matter

9. Claims 3-7, 9-14, 16-18, 20-26, and 32 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

10. The following is an examiner's statement of reasons for the indication of allowable subject matter:

Claim 3 contains allowable subject matter because none of the prior art of record discloses or suggests the claimed increasing step, in combination with the remaining claimed features.

Claims 4-6 contain allowable subject matter because none of the prior art of record discloses or suggests the claimed rules, in combination with the remaining claimed features.

Claim 7 contains allowable subject matter because none of the prior art of record

discloses or suggests the claimed noise shaping step, in combination with the remaining claimed features.

Claims 9-11 and 24-26 contain allowable subject matter because none of the prior art of record discloses or suggests the claimed the claimed compensation, in combination with the remaining claimed features.

Claims 12-14 contain allowable subject matter because none of the prior art of record discloses or suggests the claimed adjustments, in combination with the remaining claimed features.

Claims 16-18 contain allowable subject matter because none of the prior art of record discloses or suggests the claimed calculation, in combination with the remaining claimed features.

Claim 20 contains allowable subject matter because none of the prior art of record discloses or suggests the claimed computer program, in combination with the remaining claimed features.

Claims 21-22 contain allowable subject matter because none of the prior art of record discloses or suggests the claimed computer, in combination with the remaining claimed features.

Claim 23 contains allowable subject matter because none of the prior art of record discloses or suggests the claimed arms and computer, in combination with the remaining claimed features.

Claims 24-26 contain allowable subject matter because none of the prior art of

record discloses or suggests the claimed arms and computer, in combination with the remaining claimed features.

Claim 32 contains allowable subject matter because none of the prior art of record discloses or suggests the claimed combination of switching signals, in combination with the remaining claimed features.

Response to Arguments

11. Applicant's arguments, see Remarks, filed January 10, 2007, with respect to the rejections of claims 1-18, 20-26, and 32 have been fully considered and are persuasive. The rejections of claims 1-18, 20-26, and 32 have been withdrawn.

12. As to claim 1, as noted by Applicant, the original claim recitation was in error, and Applicant recognized the error and amended claim 1 to reference that the correct limitation was that the switching signal voltages do not fall below a minimum pulse width, not necessarily a minimum voltage. This was clear to the Examiner. The Examiner was slightly confused because the original claim 1 referred to the pulse width of the **output** voltage pulse (between bridge circuit 14 and load electromagnet 10 in Figure 2), whereas the amended claim 1 refers to the pulse width of the **switching signal** voltage pulse (24a or 24b in Figure 2). The confusion was with respect to which pulse the recitation was supposed to refer to, not whether the limitation was referring to minimum pulse width or minimum voltage. The Examiner apologizes for any confusion due to the Office Action dated October 10, 2006. For purposes of this Office Action, the Examiner has assumed, as indicated by Applicant, that the amended claim 1 is correct and the recitation is that the pulse width of at least one of the switching signal voltage

pulses (24a or 24b) does not fall below a minimum pulse width; and the pulse width of the output voltage pulse is not relevant for purposes of the recitation.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The US patent to Koch (6,661,636) discloses a similar method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal I. Kaplan whose telephone number is 571-272-8587. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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